Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech III Year I Semester Supplementary Examinations August-2021
CONCRETE TECHNOLOGY
(Civil Engineering)

Time: 3 hours
Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1 a Explain heat of hydration and hydration process of cement in detail. **6M**
  b Explain setting time of cement and factors affecting setting time of cement. **6M**

OR

2 a How do you conduct sieve analysis on coarse aggregate in the laboratory? **6M**
  b Differentiate between gap grading and well grading of aggregates. **6M**

UNIT-II

3 a Explain the phenomenon of gain of strength of concrete with age. **8M**
  b Calculate the Gel/space ratio and the theoretical strength of a sample of concrete made with 500 gms of cement and 0.6 w/c ratios, on full hydration and 70% hydration. **4M**

OR

4 a Explain the Maturity concept for strength development of concrete. **7M**
  b Explain the relation between compressive strength and tensile strength of concrete. **5M**

UNIT-III

5 a What are the various factors affecting the compressive strength of concrete? **6M**
  b Explain in detail about the rebound hammer test (NDT) that is conducted on existing structure to assess its strength with a neat diagram. **6M**

OR

6 a Draw the typical stress-strain curve of concrete and explain the various modulus of elasticity. **5M**
  b Draw the stress-strain curves for aggregate, cement paste and concrete and explain the behavior for each of them. **7M**

UNIT-IV

7 Design a concrete mix of M20 grade for a roof slab. Take the standard deviation of 4 MPa. The specific gravities of coarse aggregate and fine aggregate are 2.67 and 2.7 respectively. The bulk density of coarse aggregate is 1620 Kg/m3 and fineness modulus of fine of aggregate is 2.76. A slump of 50mm is necessary. The water absorption of coarse aggregate is 1% and free moisture in fine aggregate is 3%. Design the concrete mix using ACI method. Assume any missing data suitably. **12M**

OR

8 Explain the mix design procedure of concrete as per IS code Method. **12M**

UNIT-V

9 a What is light weight concrete? How is it produced. **6M**
  b What are the light weight aggregate concrete. **6M**

OR

10 Explain high performance concrete and what are the advantages of high performance concrete over conventional concrete. **12M**

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